

INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP2004/003767

A. CLASSIFICATION OF SUBJECT MATTER

Int.Cl⁷ H01L25/10, H01L25/18, G06F13/16, G06F12/00, G06F1/18, H05K1/02

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

Int.Cl⁷ H01L25/10, H01L25/18, H05K1/02

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

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Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	JP 2001-177046 A (Hitachi, Ltd.), 29 June, 2001 (29.06.01), Par. Nos. [0023] to [0037], [0071] (Family: none)	1-5, 29-36
A	JP 2003-345480 A (Hitachi, Ltd.), 05 December, 2003 (05.12.03), Par. Nos. [0014] to [0025], [0033] (Family: none)	1-5, 29-36
A	JP 2000-183173 A (NEC Corp.), 30 June, 2000 (30.06.00), Claim 1; Par. Nos. [0023] to [0043] (Family: none)	1-5, 29-36

☒ Further documents are listed in the continuation of Box C.

☐ See patent family annex.

* Special categories of cited documents:	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"A" document defining the general state of the art which is not considered to be of particular relevance	"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"E" earlier application or patent but published on or after the international filing date	"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"&" document member of the same patent family
"O" document referring to an oral disclosure, use, exhibition or other means	
"P" document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search
22 June, 2004 (22.06.04)

Date of mailing of the international search report
06 July, 2004 (06.07.04)

Name and mailing address of the ISA/
Japanese Patent Office

Authorized officer

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INTERNATIONAL SEARCH REPORT

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PCT/JP2004/003767

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	JP 11-67970 A (Fujitsu Ltd.), 09 March, 1999 (09.03.99), Par. Nos. [0017] to [0034] (Family: none)	1-5, 29-36

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Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

As mentioned on the "extra sheet", there must exist a special technical feature so linking a group of inventions of claims as to form a single general inventive concept in order that the group of inventions may satisfy the requirement of unity of invention. The international application contains four groups of inventions: the inventions of claims 1-5 and 29-36; the inventions of claims 6-17 and 25-28; the inventions of claims 18-22; and the inventions of claims 23-24.

(Continued to extra sheet.)

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:

4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.: 1-5 and 29-36

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

Continuation of Box No.III of continuation of first sheet(2)

I. Claims 1-5 and 29-36 define an invention of a device comprising mounting board wirings commonly connected to the external terminals of first and second semiconductor devices in a bit-to-bit correspondence and characterized in that "the unevenness of the lengths of the mounting board wirings cancel the unevenness of the lengths of the assembly wirings".

II. Claims 6-17 and 25-28 define an invention characterized in that a package board "comprises a first conductive layer used for connection to pad electrodes of a semiconductor chip, a second conductive layer used for a ground plane, a third conductive layer used for a power supply plane, and a fourth conductive layer used for connection to a mounting board".

III. Claims 18-22 define an invention of a technique relating to an electronic circuit that has, on a mounting board, semiconductor memory devices and a semiconductor control device that can conduct access control of the semiconductor memory devices and characterized in that the mounting board has a power supply plane for a termination power supply for terminating the wiring between the semiconductor memory devices and the semiconductor control device through termination resistors, the semiconductor memory devices are mounted nearer to the power supply plane for the termination power supply than the semiconductor control device, the termination resistors connected to the wiring and first stabilizing capacitors disposed near to the termination resistors are discretely connected to the power supply plane for the termination power supply, and a second stabilizing capacitor having a capacitance than those of the first stabilizing capacitors is connected to the power supply plane for the termination power supply at an edge of the power supply plane far from the supply edge for supplying the termination power".

IV. Claims 23, 24 define an invention of a semiconductor chip comprising a phase-locked loop circuit or delay locked loop circuit and characterized in that "the first conductive layer has a power supply wiring for supplying power to the phase-locked loop circuit or delay locked loop circuit and a clock wiring for supplying a clock signal to the phase-locked loop circuit or delay locked loop circuit and in that the power supply wiring is spaced from the clock wiring at a distance larger than the minimum spacing dimension of the wiring of the first conductive layer".

There is no technical relationship among the inventions having different features described in I, II, III, and IV and involving one or more of the same or corresponding special technical feature. Therefore, these inventions are not so linked as to form a single general inventive concept. The international application contains four groups of inventions: the inventions of claims 1-5 and 29-36; the inventions of claims 6-17 and 25-28; the inventions of claims 18-22; and the inventions of claims 23, 24.